

FORM PTO-1390 (Modified)
(REV 11-98)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

513-3 PCT/US

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/806810

INTERNATIONAL APPLICATION NO.
PCT/FI99/00827INTERNATIONAL FILING DATE
05 October 1999PRIORITY DATE CLAIMED
05 October 1998

TYPE OF INVENTION

Method and Apparatus for the Processing of Food Portions

APPLICANT(S) FOR DO/EO/US

Jukka PENTTINEN

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. has been transmitted by the International Bureau.
 - c. is not required, as the application was filed in the United States Receiving Office (RO/US).
- A translation of the International Application into English (35 U.S.C. 371(c)(2)).
- A copy of the International Search Report (PCT/ISA/210).
- Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. have been transmitted by the International Bureau.
 - c. have not been made; however, the time limit for making such amendments has NOT expired.
 - d. have not been made and will not be made.
- A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
- An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
- A copy of the International Preliminary Examination Report (PCT/IPEA/409).
- A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. A **FIRST** preliminary amendment.
16. A **SECOND** or **SUBSEQUENT** preliminary amendment.
17. A substitute specification.
18. A change of power of attorney and/or address letter.
19. Certificate of Mailing by Express Mail
20. Other items or information:

Copy of the international patent application as published under International Publication Number WO 00/20811.

EXPRESS MAIL CERTIFICATE

Date 2 April 2001 Label No. EL470330968 US
 I hereby certify that on the date indicated above, I deposited this paper or fee with the U.S. Postal Service & that it was addressed for delivery to the Assistant Commissioner for Patents, Washington, D.C. 20231 by "EXPRESS MAIL Post Office to Addressee" Service.

CASSANDRA LEMS
Name (Print)Cassandra Lems
Signature

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR)
09/806810INTERNATIONAL APPLICATION NO.
PCT/FI99/00827ATTORNEY'S DOCKET NUMBER
513-3 PCT/US21⁷ The following fees are submitted.:**BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :**

| | |
|--|------------|
| <input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO and International Search Report not prepared by the EPO or JPO | \$1,000.00 |
| <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but Internation Search Report prepared by the EPO or JPO | \$860.00 |
| <input type="checkbox"/> International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO | \$710.00 |
| <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) | \$690.00 |
| <input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) | \$100.00 |

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$1,000.00

Surcharge of \$130.00 for furnishing the oath or declaration later than
months from the earliest claimed priority date (37 CFR 1.492 (e)). 20 30

\$0.00

| CLAIMS | NUMBER FILED | NUMBER EXTRA | RATE | |
|--|--------------|--------------|---|--|
| Total claims | 11 - 20 = | 0 | x \$18.00 | \$0.00 |
| Independent claims | 2 - 3 = | 0 | x \$80.00 | \$0.00 |
| Multiple Dependent Claims (check if applicable). | | | <input checked="" type="checkbox"/> | \$270.00 |
| | | | | TOTAL OF ABOVE CALCULATIONS = \$1,270.00 |
| Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). | | | <input checked="" type="checkbox"/> | \$635.00 |
| | | | | SUBTOTAL = \$635.00 |
| Processing fee of \$130.00 for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)). | | | <input type="checkbox"/> 20 <input type="checkbox"/> 30 + | \$0.00 |
| | | | | TOTAL NATIONAL FEE = \$635.00 |
| Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). | | | <input type="checkbox"/> | \$0.00 |
| | | | | TOTAL FEES ENCLOSED = \$635.00 |
| | | | | Amount to be: refunded _____ \$ _____ charged _____ \$ _____ |

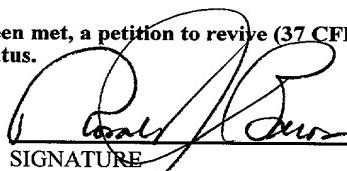
- A check in the amount of **\$635.00** to cover the above fees is enclosed.
- Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **08-2461** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

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REGISTRATION NUMBER

02 April 2001

DATE

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METHOD AND APPARATUS FOR THE PROCESSING OF FOOD PORTIONS

The present invention relates to a method as defined in the preamble of claim 1, and an apparatus as defined in the preamble of claim 4, for the processing of food portions.

Traditionally, the processing of foodstuffs, especially foodstuffs for the domestic household, consists of making a trip to a grocery, storing the foodstuffs in a refrigerator or a deep-freeze and preparing food e.g. in an oven or a microwave oven. In practice, plenty of time is consumed in collecting foodstuffs, and similarly preparing food from the foodstuffs requires many different devices and appliances which take up a lot of space and, because of their variety, form complex entities that are difficult to maintain, among other things. Moreover, there are many groups of people, such as the old, handicapped and also children, who are unable to prepare a food portion for themselves using current methods and apparatus.

The object of the present invention is to change this traditional way of action by automating the chain of foodstuff processing for the preparation of daily food portions in a manner unknown so far. In this way, the amount of work needed for meals in homes, institutions, such as old-age homes, and in small offices is reduced considerably. Likewise, making food is made easier and will be possible even for people who are unable or unwilling to prepare their own food. To achieve this object, the method according to the invention is characterised by the features defined in the characterisation part of claim 1, and the apparatus according to the invention is charac-

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terised by the features defined in the characterisation part of claim 4. Other preferred embodiments of the invention are characterised by what is presented in the other claims.

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The solution of the invention has the advantage that it provides an easy and smooth as well as economical and labour-saving and space-saving method for foodstuff supply for in homes, institutions and small offices. This means that old and handicapped people as well as children will find it easy to prepare their food themselves. According to the invention, the preparation of food portions ready to be eaten is accomplished using a single apparatus which comprises spaces for the storage, heating and serving of food portions. Such an integrated apparatus allows easy heating and substantially reduces the work and labour required for the acquisition and preparation of food. The invention described here consists of a method and apparatus by means of which it is possible, depending on the application, to maintain a connection over a telecommunication network, such as an information network or a telephone network, with a supplier of foodstuffs or with some other organisation. The apparatus comprises spaces for cold storage and spaces for heating of food portions. The apparatus is supplied with foodstuffs in suitable amounts e.g. once a week. The foodstuffs are delivered as ready-made frozen food portions, which are stored in the cold spaces in the apparatus. When the user wants a meal, he/she activates the apparatus, whereupon, in accordance with a command given by the user, the apparatus selects the portion, heats it to a suitable temperature and delivers the heated portion on a delivery table provided in the apparatus. The solution of the invention additionally provides the advantage of making it easy to achieve control of nutrition level, so

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the users can themselves adjust their diet to get healthy food to their liking. A further advantage is that products can be easily identified e.g. using a bar code system.

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In the following, the invention will be described in detail by the aid of one of its embodiments with reference to the drawings, wherein

10 Fig. 1 presents the apparatus in the form of a block diagram, and

Fig. 2 presents an apparatus according to the invention in simplified form in an oblique front view.

15

According to Fig. 1, frozen food portions are placed for storage into a cold storage space represented by block 1, which is held at a low temperature suited for the storage of frozen foodstuffs. The regulation of temperature is implemented using refrigerating techniques known in themselves, by applying e.g. the compression or evaporation method. The humidity level in the storage space can also be regulated if necessary. The foodstuffs are packed as complete portions and frozen. In a preferred embodiment of the invention, all food portions in the apparatus are stored at the same temperature. Block 2 represents a transfer mechanism used to transfer the food portion into a heating unit 3 functioning as a cooking compartment. The transfer mechanism may be implemented using technology known in itself. The heating unit represented by block 3 heats the food portion to a uniform temperature suitable for the user by applying resistance heating or microwave heating technology or a combination of these. The heating system may comprise temperature regulation or control of output power and thermal energy to allow desired temperatures to be

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reached. A serving device, represented by block 4, makes it possible to bring the heated food portion to within the user's reach so as to make it as easy as possible for the user to take out the food portion 5 from the machine. If necessary, the transfer mechanism also works between the heating unit and the serving device.

Block 9 is a data processing section, which comprises 10 a telecommunication unit 5 containing the required data communication functions, a control centre 6 and a user interface 7. With present-day technology, the data processing section 9 can be implemented using a microcomputer. The microcomputer used 15 may be a separate computer in the home or it may be a computer integrated with the apparatus of the invention. In the case of a separate computer, the apparatus comprises means for connecting the computer to the apparatus.

20 The telecommunication part of the system is implemented e.g. using an Internet connection via a telephone network 8. Telecommunication can be applied for ordering new foodstuffs from a foodstuff supplier.

25 This function may be automated so that a new order is sent when the amount of foodstuffs falls below a set minimum. Ordering can also be effected manually, in which case the user defines via the microcomputer user interface the quantity and quality of foodstuffs 30 to be delivered. The network connection can also be used to transmit information regarding possible faults in the apparatus as well as for sending a notification when the apparatus is about to run out of foodstuffs, and it can also be used for remote activation 35 of the apparatus e.g. to select a food portion and to start heating. The remote activation is specially good for the old people or handicapped people

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who cannot use the device alone. They can still live at home and the device is switched on via the remote activation in order to prepare a warm meal for them. For remote activation, it is also possible to use another microcomputer, through which the user can additionally see the number of food portions in the home or the like as well as the content of the portions. The remote activation can be used also for monitoring the functions of the apparatus. For instance to check what kind of food portions there are in the apparatus, or when the apparatus has been used, and to perform a fault diagnosis, etc. Information can be stored into the main frame computers of the telecommunication network or into the server computers. The storage is done via the telecommunication network. This is useful for foodstuff suppliers who can avoid investing to big computer solutions in their own offices. Instead they can use inexpensive computer solutions.

Furthermore, a microcomputer provides a possibility for controlling the amounts and quality of nutrients in the foodstuffs, either automatically or by guiding the user. Control of nutrition level is easy to implement, so that when the user needs a diet, the computer will take care of realising it.

Block 6 is a control centre and it functions as a controller of the automation of the apparatus. In modern computers, it is possible to add electronic circuit boards providing input and output connections for the control of other devices. Connections are provided from the control centre 6 to the food portion storage unit 1, to the transfer mechanism 2, to the heating unit 3 and to the serving device 4. The control centre 6 is further connected to the telecommunication unit 5 and to the user interface

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7. The user interface represented by block 7 can be implemented with facilities feasible in conjunction with the electronics, microcomputer or alike. These include e.g. a keyboard, a mouse and a touch-sensitive display screen as well as communication by speech.

Another very handy user interface is one based on cards or discs provided with illustrations of food portions. In this case, for instance, one side of the card is provided with a picture and/or designation of the food portion and the same side or the opposite side is provided with an identification marking based on bar code, magnetic stripe or equivalent, representing the same food portion. When the user inserts a card representing the desired food portion into the user interface of the apparatus, the apparatus will read the identification marking, prepare the food portion and mark the portion as consumed.

Fig. 2 illustrates the mechanical structure of an apparatus according to the invention, in a simplified form and in an oblique front view. In the figure, the cover part normally placed on the top of the apparatus and the heating unit that may be comprised in it as well as the door in the front wall of the apparatus have been omitted. The apparatus comprises a frame part 10, the interior of which comprises a cold storage space 1 with storage boxes 11 for packaged food portions 15. Mounted next to the cold storage space is a transfer mechanism 2, which comprises a transfer device 12, 13 for taking a food portion 15 from a storage box 11 and hoist guides 14 for hoisting the transfer device from the cold storage space to the upper part of the apparatus. Moreover, the upper part of the apparatus is

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provided with a heating unit 3, from which the user can take the food portion when it is ready to be eaten. The transfer device comprises a transfer pan 12, onto which the food portion is moved from the storage box 11, and a transfer gear 13, which is used to take the food portion out of the storage box 11 and also to move it to the heating unit 3 in the upper part of the apparatus.

- 10 Fig. 2 shows the same food portion package 15 at three different stages and the position of the transfer device 12 at two different stages. At the first stage, the food portion 15 has just been taken from the storage box onto the transfer device 12a; 15 at the second stage, the food portion 15b is lying on the transfer device 12b just before being moved into the heating unit; and at the third stage, the food portion 15c is in the heating unit 3.
- 20 The products are identified on the basis of a bar code system or a magnetic stripe or equivalent, which has the advantage of definite markings that allow the system of the invention to reliably identify the foodstuffs brought into the apparatus.
- 25 Based on an order, the foodstuffs are delivered directly into the apparatus from a delivery van of a food supply company or some other service organisation. In the home, the apparatus is placed in a suitable location, e.g. in the kitchen, as a stand-alone appliance or built in kitchen fittings, such 30 as a work table. The small dimensions of the apparatus also allow it to be placed in a vestibule or living room.
- 35 The user can regularly observe his/her nutrient supply, consumption habits, costs and other related matters by the information accumulated in a database

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in the apparatus, and if desired, reports can be printed out on a printer connected to the apparatus.

It is obvious to the person skilled in the art that
5 the invention is not restricted to the examples de-
scribed above but that it may be varied within the
scope of the claims presented below. Thus, a pre-
ferred embodiment of the invention may be so imple-
mented that the food portion is not moved but in-
10 stead the temperature in its storage box is changed
during the heating of the food portion. This embodi-
ment comprises no transfer mechanism. The storage
space may also be divided into separate boxes. When
15 the storage space has been divided into boxes, it
will be possible to store different food portions in
different conditions regarding temperature and hu-
midity. In this case, each box is adjusted sepa-
rately if necessary. The operation may also be such
that the final portion consists of several sub-
20 portions, which are processed by the apparatus by
turns. In this case, no ready-made food portions are
needed, but the components are stored in separate
storage spaces, from where the apparatus only col-
lects them and prepares a food portion at heating
25 time. The apparatus may also be so located that the
deliverer of fresh supplies can place the foodstuffs
into the apparatus using his own key, yet without
having to enter the building. In this case, the ap-
paratus is provided with a back door which opens di-
30 rectly to the outside of the building.

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CLAIMS

1. Method for the processing of food portions, in which method the food portions are delivered to a cold storage space (1) situated by a user, from said cold storage space the food portion wanted each time is moved in connection with the activation of the heating phase to a heating unit (3) where the food portion is heated, after which the food portion is ready for serving, characterised in that the preparation of food portions ready to be eaten is accomplished using a single apparatus which comprises at least a space for the cold storage, heating and serving of food portions, and which apparatus is connected when needed over a telecommunication network or alike with a supplier of foodstuffs or with some other organisation, such as a service and maintenance, or a main frame computer or a server computer where the information needed is stored.
2. Method as defined in claim 1, characterised in that the order for new food portions is done over the telecommunication network.
3. Method as defined in claim 1 or 2, characterised in that the selection and the heating of the food portions is performed when needed by remote activation of the apparatus over the telecommunication network.
4. Apparatus for the processing of food portions, said apparatus comprising at least a cold storage space (1) for the storage of food portions and a heating unit (3), characterised in that the cold storage space (1) and the heating unit (3) are integrated into a single assembly, which has been ar-

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ranged to be controlled by means of a control centre (6) and a user interface (7).

5. Apparatus as defined in claim 4, characterised in
that, in addition to the cold storage space (1),
heating unit (3) and user interface (7), the apparatus
comprises a telecommunication unit (5), which
serves to provide communication with a supplier of
food portions, a failure data monitoring party or
10 equivalent.

15. Apparatus as defined in claim 4 or 5, character-
ised in that the apparatus comprises a transfer
mechanism (2), which has been arranged to transfer
food portions from the cold storage space into the
heating unit and, if necessary, further to a serving
device (4).

20. Apparatus as defined in claim 4, 5 or 6, charac-
terised in that the apparatus comprises a data proc-
essing section (9), which has been arranged to func-
tion as a supervising element storing and distribut-
ing information and activating the functions of the
apparatus.

25. Apparatus as defined in any one of the preceding
apparatus claims, characterised in that the appara-
tus is connected to a telecommunication network,
such as a telephone network or internet(8), over
30 which the ordering of food portions, remote opera-
tion of the apparatus, transmission of failure in-
formation etc. have been arranged to be effected.

35. Apparatus as defined in any one of the preceding
apparatus claims, characterised in that the appara-
tus comprises a system for controlling the user's
nutrition level and diet.

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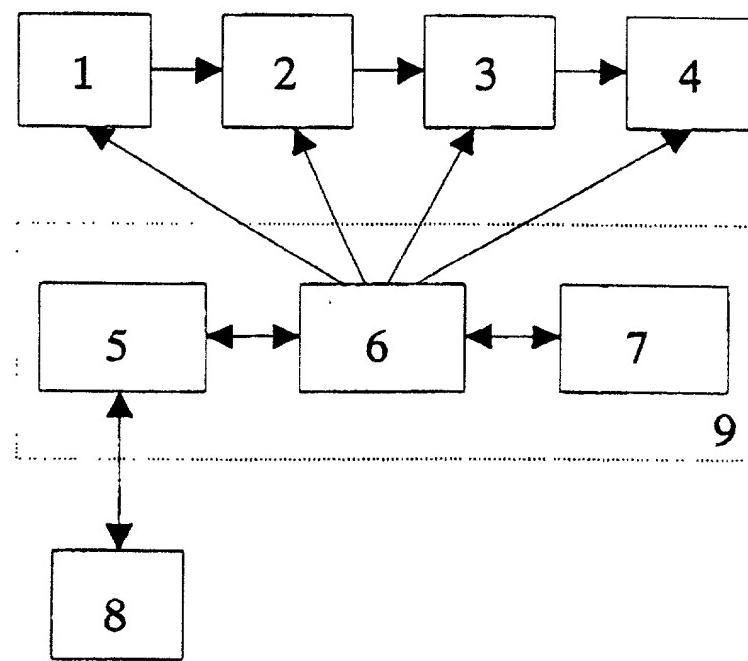


Fig. 1

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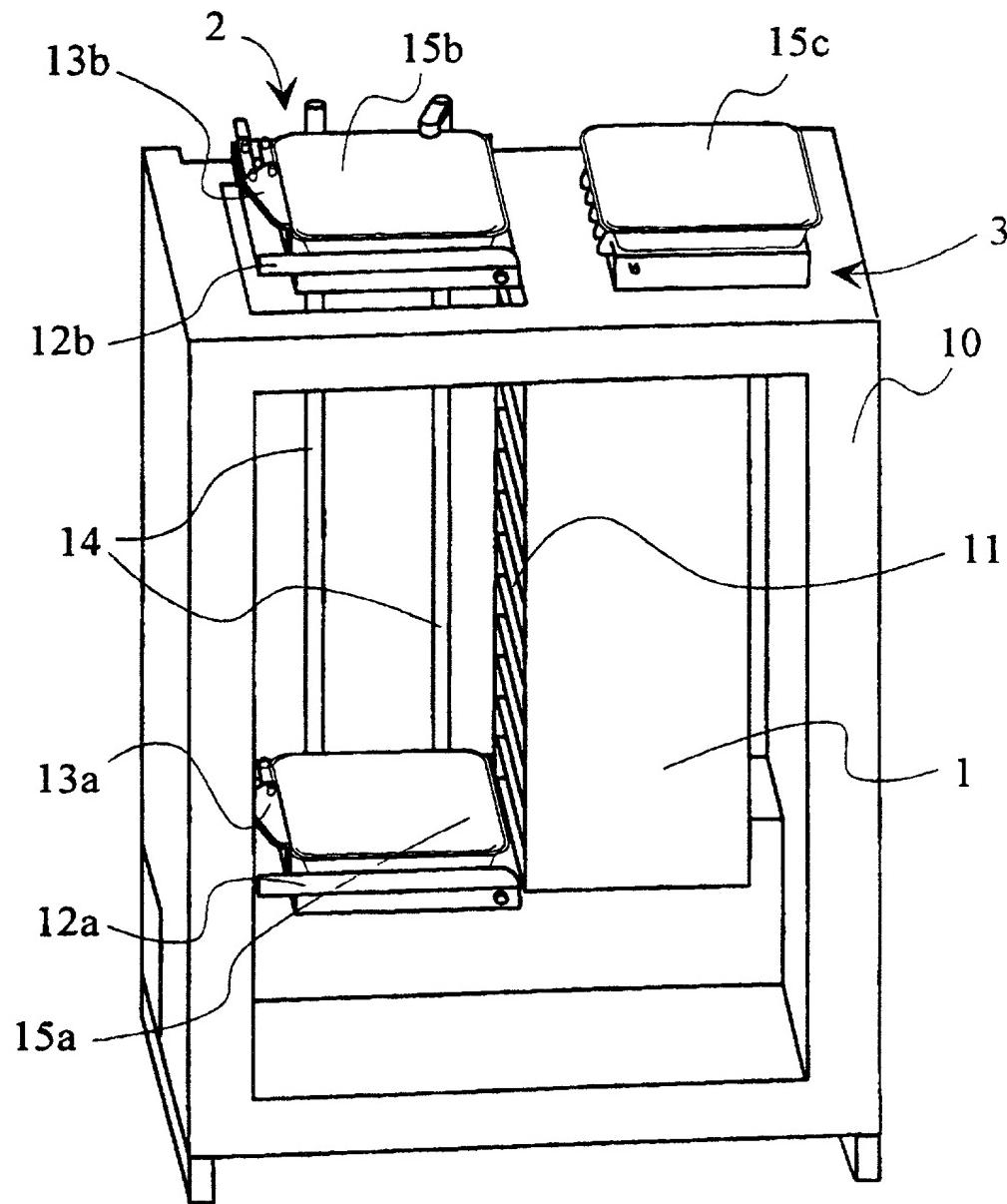


Fig. 2

Docket No.
513-3 PCT/US

Declaration and Power of Attorney For Patent Application

English Language Declaration

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Method and Apparatus for the Processing of Food Portions

the specification of which

(check one)

is attached hereto.

was filed on 05 October 1999 as United States Application No. or PCT International

Application Number PCT/FI99/00827

and was amended on

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I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application(s)

Priority Not Claimed

| | | |
|---------------------|----------------------|---|
| U980432 (Number) | Finland (Country) | 05 October 1998 (Day/Month/Year Filed) |
| (Number) | (Country) | (Day/Month/Year Filed) |
| (Number) | (Country) | (Day/Month/Year Filed) |

I hereby claim the benefit under 35 U.S.C. Section 119(e) of any United States provisional application(s) listed below:

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

(Application Serial No.)

(Filing Date)

I hereby claim the benefit under 35 U. S. C. Section 120 of any United States application(s), or Section 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. Section 112, I acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in Title 37, C. F. R., Section 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application:

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

(Application Serial No.)

(Filing Date)

(Status)
(patented, pending, abandoned)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

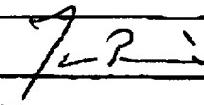
POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Charles R. Hoffmann, Reg. No. 24,102; Ronald J. Baron, Reg. No. 29,281; Gerald T. Bodner, Reg. No. 30,449; A. Thomas Kammer, Reg. No. 28,226; Irving N. Feit, Reg. No. 28,601; Alan M. Sack, Reg. No. 31,874; Algis Adliaitis, Reg. No. 36,995; Gregory W. Bachmann, Reg. No. 41,593; Anthony E. Bennett, Reg. No. 40,910; Joseph J. Catanzaro, Reg. No. 25,937; Lauren T. Emr, Reg. No. 46,139; James F. Harrington, Reg. No. 44,741; Glenn T. Henneberger, Reg. No. 36,074; Justin K. Holmes, Reg. No. 42,666; Kevin E. McDermott, Reg. No. 35,946; Robert Parsippany Boulevard, Parsippany, NJ 07054. C. Morris, Reg. No. 42,910; R. Glenn Schroeder,

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Ronald J. Baron 516-832-3550

| | |
|---|---------------|
| Full name of sole or first inventor <u>Jukka PENTTINEN</u> | Date |
| Sole or first Inventor's signature  | 31 March 2001 |
| Residence <u>Helsinki, Finland</u> | |
| Citizenship <u>Finland</u> | |
| Post Office Address <u>Tamessilantie 2 A 4</u> | |
| FIN-00830 Helsinki, Finland | |

| | |
|--------------------------------------|------|
| Full name of second inventor, if any | |
| Second Inventor's signature | Date |
| Residence | |
| Citizenship | |
| Post Office Address | |
| | |